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chemical journals form an excellent feature of the book. The habit of going to proper sources for fuller information cannot be formed too early and is of fundamental importance to any one hoping to do scientific work.

W. A. N.

A Manual of Quantitative Chemical Analysis, for the use of Students. By FREDERICK A. CAIRNS, A. M., Late Instructor in Analytical Chemistry in School of Mines, Columbia College. Third edition. Revised and Enlarged by ELWYN WALLER, Ph.D., formerly Professor of Analytical Chemistry in School of Mines, Columbia College. New York, Henry Holt & Co. 1896. Pp. xii+417.

This work was first published in 1880. In the thorough revision, which has become necessary, a considerable portion has been rewritten and additional chapters have been inserted, while the portion upon organic proximate analysis has been omitted.

The book is evidently intended for use in training those who intend to use their knowledge of analytical chemistry along commercial lines. After an introduction of twenty-two pages, ten chapters are given which contain directions for the complete analysis of a series of pure salts, including directions for the determination of seventeen elements. Then follows the main portion of the book, with chapters giving detailed directions for the analysis of limestones, clay, ores, metals and alloys as found in commerce, potable and mineral waters, acids and alkalies, bleaching powder, fertilizers, coal and commercial nitrates.

The selection of topics is such as to meet very satisfactorily the need of the practical chemist, and the directions given are clear and sufficiently full for beginners. The appendix, by Professor Waller, giving the properties of precipitates is an especially valuable feature of the book.

It would be impossible for any one to write a book covering such an multitude of details as are required in quantitative analysis and give directions which accord, in every case, with the best knowledge of the subject. Two cases which may be criticized on this ground are worthy of notice because of their importance.

Gladding has shown (J. Am. Ch. Soc., 17, 398) that barium chloride should be added very slowly to secure a pure precipitate of barium sulphate, and Jannasch and Richards (J. Prak. Ch., 39, 321) and Schneider (Z. f. Phys. Ch., 10, 425) have shown that the barium sulphate precipitated in presence of ferric salts contains ferric sulphate, which loses sulphuric acid on ignition and renders a subsequent purification by fusion inaccurate. The other case is that of the Lindo-Gladding method for the determination of potassium. It has been shown that the method is inaccurate because the potassium of the chloro-platinate is partly replaced by ammonium on washing with ammoniums chloride.

Since Ostwald has pointed out so clearly the value of the new theories of physical chemistry for the practical discussion of many topics in analytical chemistry, it is to be hoped that some discussion of that sort may soon find its way into our text-books. The present book is neither better nor worse than others in that regard.

W. A. N.

SCIENTIFIC JOURNALS.

THE AUK, JANUARY, 1897.

THE number contains articles of varied interest. Mr. E. W. Nelson describes some forty new species and subspecies and one new genus of birds from Mexico and Guatemala, collected by himself and Mr. E. A. Goldman during explorations conducted for the Biological Survey of the United States Department of Agriculture during the last five years. These collections include between four and five thousand specimens, many of them collected in districts never before visited by an ornithologist. Dr. A. P. Chadbourne concludes his paper, begun in the October number, on 'Evidence suggestive of the Occurrence of Individual Dichromatism in *Megascops asio*.' This paper is illustrated with a colored plate. Two captive individuals of this species, fed on an exclusive diet of liver, were observed to change from the gray to the red phase without any evidence of molting. Other technical papers treat of various questions of nomenclature and include descriptions of a new subspecies each of the Yellow and Black-throated Blue Warblers.